



DEPARTMENT OF DEFENCE
DEFENCE SCIENCE & TECHNOLOGY ORGANISATION

DSTO

Ship Resource Simulation Model

**Maritime Platforms Division
DSTO**

Development History

- Developed by the Offshore Patrol Combatant Project – contracted to Mercadier Pty Ltd**
- OPC – Operational Profile Database**
- Mission Manpower Model**
- MPD – Ported to PC**
 - MapInfo GIS**
 - Access database**
 - Renamed to SRSM**
- Requirements workshop conducted with stakeholders – Dec 1999**

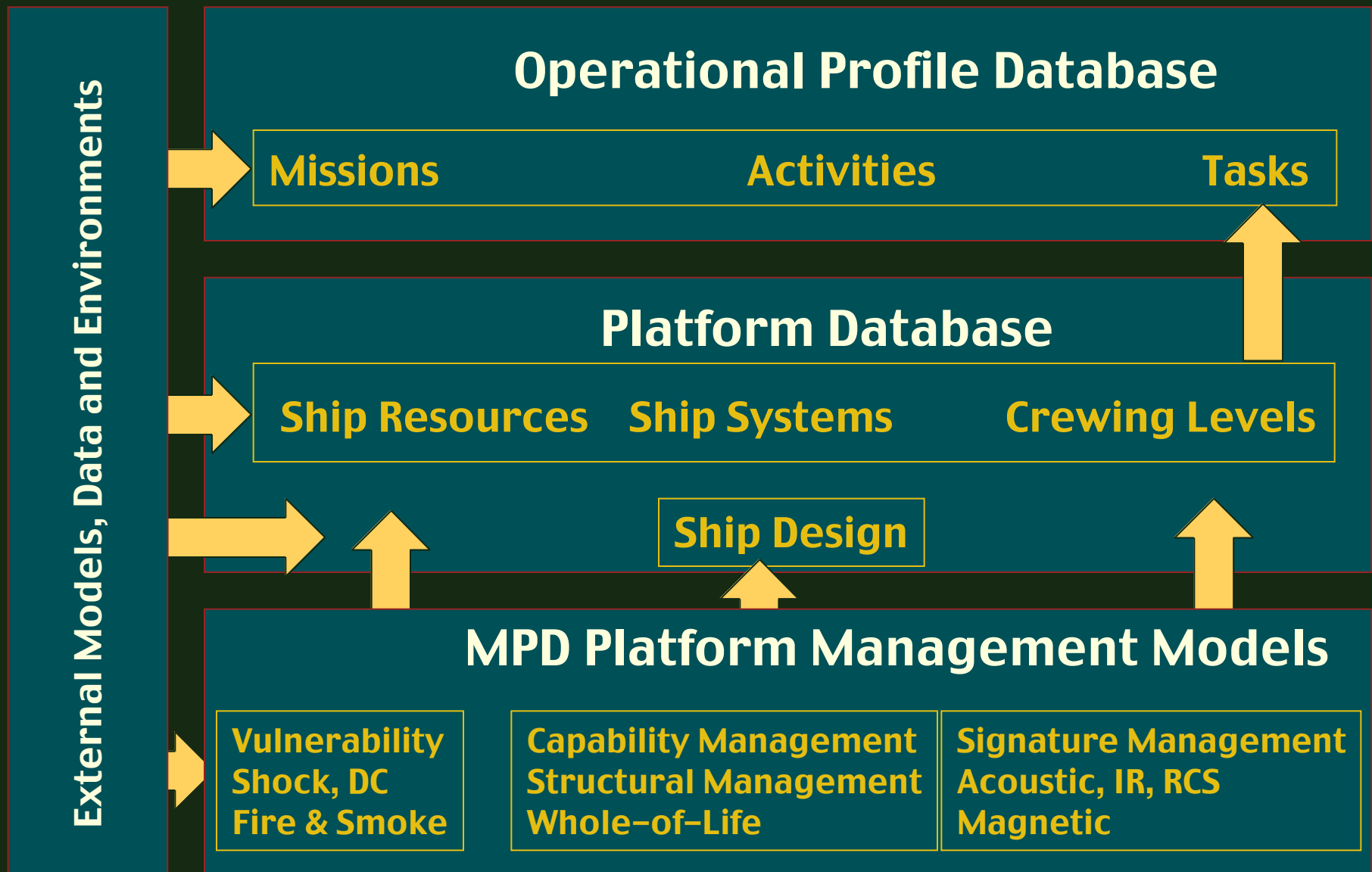
Modelling Ships Complement

- MPD investigating two approaches**
 - Ship Resource Simulation Model**
 - Scheduling model**
 - Micro Saint (with COM services)**
 - Discrete event stepped simulation of task networks**

Ship Resource Simulation Model

- Operational Profile Database**
 - missions, activities, tasks
- Electronic model of platform**
- Geographic Information System**
 - Mission planning
 - platform description
- Based on Offshore Patrol Combatant MPD**
 - ported to PC
 - interface enhancements
 - DWPE study/Patrol Boat Study

The MPD/Mercadier Ship Resource Simulation Model



Force Element Organisation

- The Force Element has a list of potential missions**
- Each mission contains a list of serials**
- Each serial is described by a state and environment**
- Each serial contains a list of activities**
- Each activity contains a list of primary tasks**
- The model operates at the level of primary task. This is to say that it schedules each primary task in turn.**
- Each primary task contains a list of skills (called enabling tasks)**

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- **Each primary task can have crew assigned. These normally come from a suggested list based on the enabling tasks (skills) but can also be directly assigned.**
 - **Each enabling task (skill) contains a list of resources and systems needed (consumable and other).**
 - **Primary tasks can be a continuous task or a delta task**

Ship Resource Simulation Model

**Activity Based
Management**

**Military
Response
Options**

**Subject Matter
Experts**

**Programmed
Activity**

Operational Database

Mission



Serials



Activities

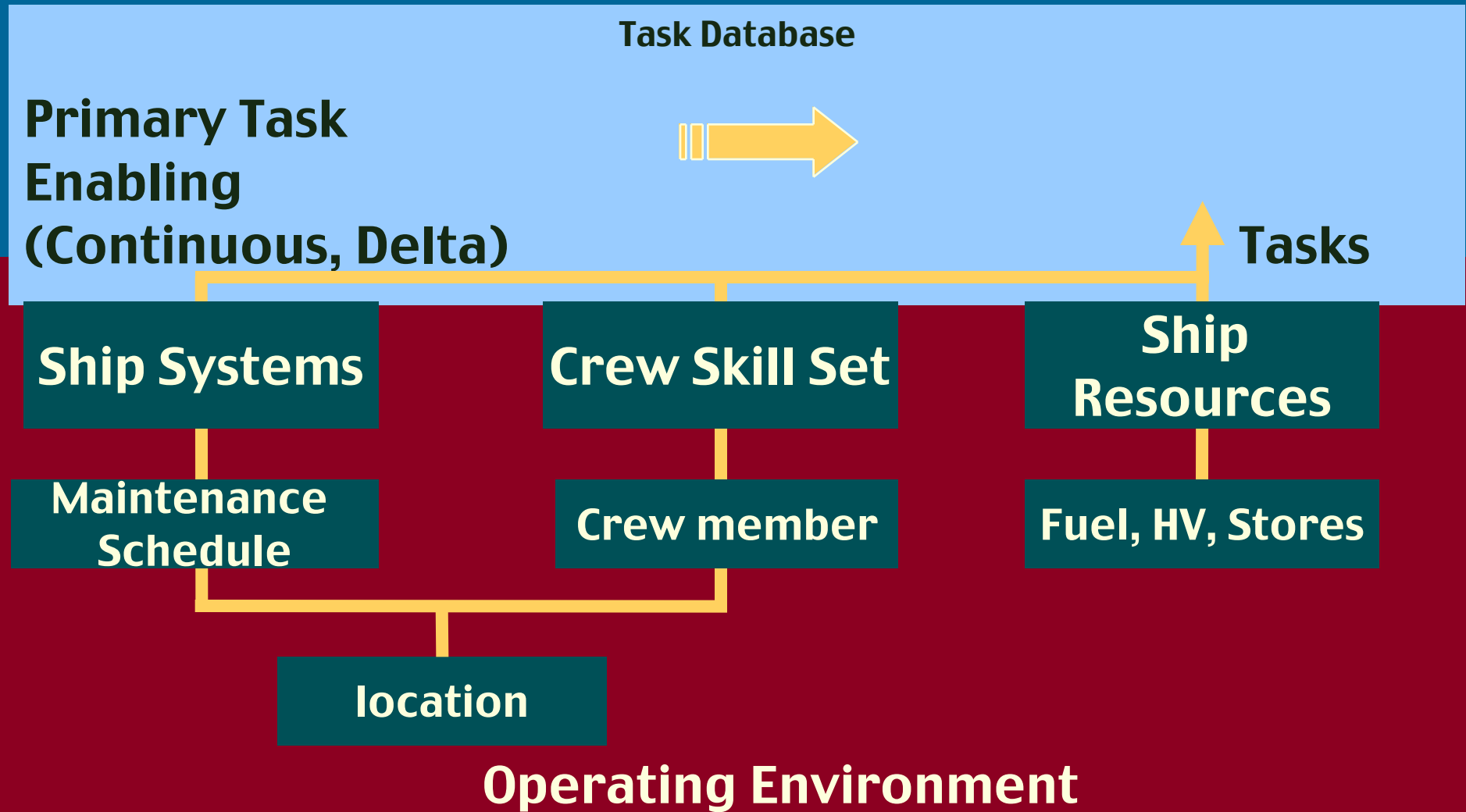
Task Database

**Primary Task
Enabling
(Continuous, Delta)**



Tasks

Ship Resource Simulation Model



Initial Screen

Resource Simulation Model

Logon: Force Element: **OPC**

Operational Profile Development

Force Element	System Data	Configuration
Environments	Location Data	Skills
States	Resource Data	Ships Complement
Activities	Primary Tasks	Personnel Data

Structures

Develop Capability Structure	Enter Continuous Primary Tasks
Develop Skills Structure	Attribute Enabling Tasks to System
Develop Systems Structure	

Mission Data

Mission Planning Details	Run Mission Profile
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Mercadier

Resource Simulation Model

Version 2.02 Alpha
27/10/1999

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About Exit

Running a Mission

The screenshot shows the 'Run RSM Model' window. At the top, there is a 'Run' button with a green checkmark icon, a text box containing '1', and two dropdown menus showing 'Mission Manpower Model Train' and 'RSM Demo Mission'. Below these is a 'View Error Log' button. The main area is a log window displaying a series of timestamped events. To the right of the log is a table showing the status of various tasks. At the bottom right, there is a 'Full Trace' checkbox (checked) and an 'Action Counter' showing '4138'. At the bottom left, there are two text boxes: 'Resources 240v AC 60Hz' and 'SerialNo= 1 Resources below lower limit'. At the bottom right, there is an 'Errors' box showing '187'. A 'Close' button is located at the bottom right corner.

Run RSM Model

☒ Run 1 Mission Manpower Model Train RSM Demo Mission

View Error Log

09/02/00 19:03:22 Tentative Scheduling Delta Primary Task 472
09/02/00 19:03:22 Tentative Scheduling Delta Primary Task 474
09/02/00 19:03:22 Assigned Person 95
09/02/00 19:03:22 Assigned Person 85
09/02/00 19:03:22 Assigned Person 94
09/02/00 19:03:22 Scheduling Delta Primary Task 440.5
09/02/00 19:03:23 Scheduling Delta Primary Task 472
09/02/00 19:03:23 Scheduling Delta Primary Task 474
09/02/00 19:03:24 Scheduling Activity 11
09/02/00 19:03:24 Tentative Scheduling Delta Primary Task 424
09/02/00 19:03:24 Assigned Person 86
09/02/00 19:03:24 Scheduling Delta Primary Task 424
09/02/00 19:03:25 Saving Personal Data
09/02/00 19:03:39 Setting Initial Resources
09/02/00 19:03:40 Calculating Resources Used
09/02/00 19:04:36 Recording Systems Used
09/02/00 19:04:52 Scheduling Done
Scheduling Time 0:02:03

Check Database	Done
Dcl Last Run	Done
Sched Serials	Done
Saving Data	Done
Resource Check	Done

☒ Full Trace Action Counter: 4138

Resources 240v AC 60Hz SerialNo= 1 Resources below lower limit Errors: 187

Close

Applications of the Platform Model

- Preparedness modelling**
 - readiness and sustainability based on programmed activity**
- Optimum manning**
- Damage control modelling**
- Whole of Life management**
- Damage Control Modelling**
- Resource usage**
- Future personnel profile**
- Future training requirements**

Summary

- **Model successfully ported to the PC**
 - still some bugs
- **Available for evaluation by HUM TP9**
- **Evaluated in the Replacement Patrol Boat Project**